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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,302	11/19/2001	Kyoung Hwan Chin	SEC.910	8429
7590	07/13/2004		EXAMINER	
VOLENTINE FRANCOS, P.L.L.C.			WINTER, GENTLE E	
Suite 150				
12200 Sunrise Valley Drive			ART UNIT	
Reston, VA 20191			PAPER NUMBER	
			1746	

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/988,302	CHIN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Gentle E Winter	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 and 10-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Remarks***

1. The Remarks argue that the reference fails to teach on “gas nozzles \*\*\* on a sidewall of the chamber around the chuck.” The argument is not persuasive. Schneider teaches that the gas manifold has gas nozzles on a sidewall of the chamber around the chuck. It may be that the claims were suggesting that the nozzles were perpendicular to the vertical sidewall. This is not claimed. It is not clear what is intended by “a sidewall of the chamber”.
2. The Remarks argue that Schnieder does not disclose a chamber at all. This ignores the plain text and the drawings of the reference. Making such arguments does little to meaningfully advance prosecution. Nonetheless, the last Official action on page 2, in paragraph 1 states:

Schneider reads of claim 1 in the following manner. Both the claims and Schneider disclose a chamber (“process chamber 15” see figure 1 and relevant associated text.).
3. Because each and every limitation of claims 1-3 and 5 is identically taught in the reference the rejection is maintained.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent No. 6,263,829 to Schneider et al "Schneider". Schneider reads of claim 1 in the following manner. Both the claims and Schneider disclose a chamber ("process chamber 15" see figure 1 and relevant associated text.) formed with a closed space therein; an upper electrode provided in an upper portion of the chamber and applied with radio frequency energy; a lower electrode provided below the upper electrode and applied with radio frequency energy; ("The gas can also be energized by capacitively coupling RF energy to the gas by applying an RF current to process electrodes 90, 95 in the process chamber 15." See fig 1 and relevant associated text.) A chuck provided below the upper electrode and formed thereon with the lower electrode to fix a wafer thereon; ("The substrate 30 is held in place on a chuck 40, such as an electrostatic chuck (as shown) or a mechanical chuck (not shown)") and at least three cleaning gas nozzles provided at regular intervals on a sidewall of the chamber around the chuck. (Figure 9b and relevant associated text).

6. As to claim 2, disclosing that at least one cleaning gas nozzle is bent toward an upper center of the chamber relative to an upper surface of the chuck, the same is disclosed in figure 9b and relevant associated text.

7. As to claim 3, further limiting claim 2, and disclosing that each cleaning gas nozzle is bent toward an upper center of the chamber relative to an upper surface of the chuck the same is disclosed in figure 9b and relevant associated text.

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8. As to claim 5, disclosing that the cleaning gas is NF<sub>3</sub> the nozzles could accommodate NF<sub>3</sub>.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider and United States Patent No. 3,717,439 to Sakai, "Sakai". Each and every limitation of claim 4 is identically disclosed in Schneider, as set forth above, except Schneider fails to explicitly disclose that at least one nozzle is bent in a spiral form toward a center portion of the chamber and in a direction from a lower portion to an upper portion relative to an upper surface of the chuck. It is noted that the specification has been relied on to understand what is contextually meant by the term "spiral". Sakai discloses the missing element (amounts of carrier gas are introduced through the nozzles of the carrier gas pipes 10 into the reaction chamber 6 along its inner wall in the direction indicated by the arrows 18 of FIG. 2, ... while whirling the reaction gas and carrier gas together." See figure 2 and *inter alia* column 3, line 28 *et seq.*) Additionally, Sakai provides the explicit motivation for making the claimed combination. Namely, Sakai states at column 2, line 9 *et seq.*, that such a modification provides an apparatus of simple construction capable of producing a semiconductor element while providing uniform thickness, composition and dimensional precision. See column 2, line 10 *et seq.* The artisan would have been motivated to

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make the claimed combination for the reason explicitly set forth by Sakai, including better mixing and improved product resulting from improved gas distribution.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-5 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art. In figure 1, of applicants' specification applicants teaches all the limitations of the pending claims, except that applicants' admitted prior art fails to teach at least three cleaning gas nozzles. The only difference between applicants' admitted prior art and the claimed invention is the number of nozzles. The nozzles are not asserted to do anything different than they do in the prior art. No evidence of unexpected results has been provided. It has been held that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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14. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gentle E Winter whose telephone number is 571-272-1310. The examiner can normally be reached on Monday through Friday 7AM-4PM.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gentle E. Winter  
Examiner  
Art Unit 1746

July 9, 2004

A handwritten signature in black ink, appearing to read "Michael Barr", with a long horizontal flourish extending to the right.

**MICHAEL BARR**  
**PRIMARY EXAMINER**